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10/568,977	03/27/2006	Lambertus Gerhardus Olde Hanter	12903/010	8835
80711 7590 11/25/2008 Brinks Hofer Gilson & Lyon/Ann Arbor 524 South Main Street Suite 200 Ann Arbor, MI 48104				
EXAMINER				
CHOI, LING SIU				
ART UNIT		PAPER NUMBER		
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MAIL DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,977

Applicant(s)

OLDE HANTER ET AL.

Examiner

Ling-Siu Choi

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 19 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to the Amendment filed 08/19/2008. Claims 1-8 were canceled and claims 9-19 are now pending. In view of the Amendment, the rejections of claims 9-19 are maintained.

Claim Analysis

2. Summary of Claim 9:

A process for enhancing the melt strength of polypropylene comprising the steps of:	
A	mixing 100 parts per weight (ppw) of the polypropylene with at least 0.1-8 ppw of an oligomer of maleimide or an oligomer of a maleimide derivative to form a mixture,
B	reacting said mixture at a temperature between 150° C and 300° C
wherein said mixture is substantially absent of any peroxide	

Summary of Claim 13:

A composition , which is substantially free from peroxide, comprising	
A	100 parts per weight (ppw) of polypropylene
B	0.1-8 ppw of an oligomer of maleimide or an oligomer of a maleimide derivative or <u>a mixture of 0.1-8 ppw of a monomer of maleimide or a derivative thereof and a base</u>
wherein said mixture is substantially absent of any peroxide	

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Summary of Claim 15:

A polypropylene which is substantially free from peroxide	
	obtained from the composition of claim 13 with enhanced melt strength, which is at least 1.5 times higher than the melt strength of the corresponding non-modified polypropylene

Claim Rejections

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim Rejections - 35 USC § 102

5. Claims 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishio et al. (US 5,494,948).

Nishio et al. disclose a mica-reinforced propylene resin composition obtained by heating and melting a mixture consisting essentially of (A) 40 to 95 parts by weight of a crystalline polypropylene, (B) 60 to 5 parts by weight of mica treated with an organosilane compound, (C) a bismaleimide compound in an amount of 0.01 to 2.0 parts by weight per 100 parts by weight of the sum of components (A) and (B), and (D) an organic peroxide, wherein the organic peroxide is present in an amount which falls within the range of from 0.001 to 0.05 part by weight per 100 parts by weight of the mixture (A) and (B) and the heating and melting treatment is carried out at a temperature of from 210°C to 290°C (claims 1 and 6-7). Nishio et al. further disclose that the bismaleimide can be 4-methyl-m-phenylenebismaleimide which is derived from citraconic acid (col. 2, lines 52-67). Thus, the present claims are anticipated by the disclosure of Nishio et al.

6. Claims 9-10, 13-14, and 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Cai et al. (US 2004/0242779 A1).

Cai et al. disclose a modified blend being obtained by dynamically vulcanizing a blend comprising at least one propylene resin in an amount from about 10 to 70 wt% and at least one ethylene/alpha-olefin/non-conjugated diene elastomer in the presence of a curing system which comprises a free radical initiator, a first co-agent comprising diene-containing polymers with a 1,2-vinyl content greater than about 50% by weight, and a second co-agent comprising multifunctional maleimides containing at least two imide groups, wherein the free radical initiator comprises at least one organic peroxide

in an amount of about 0.001 to 2 wt%; the first co-gent is in an amount of from about 0.1 to 10 wt%; the second co-agent comprises N,N'-m-phenylene dimaleimide in an amount of about 0.1 to 10% by weight of the modified blend ([0016]-[0018]; [0027]; [0035]; claims 1, 8, and 10). Cai et al. further disclose that the extrusion temperature is 205°C ([0068]). Cai et al. furthermore disclose that the blend are useful in automotive and other articles, such as gaskets, weatherseals, cup holders, and air bag covers and can also be used in machine parts, electrical parts, cables, hoses, belts and toys ([0060]). Thus, the present claims are anticipated by the disclosure of Cai et al.

Claim Rejections - 35 USC § 102/103

7. Claims 15 -16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nishio et al. (US 5,494,948).

Nishio et al. disclose a propylene resin obtained by heating and melting a mixture consisting essentially of (A) 40 to 95 parts by weight of a crystalline polypropylene, (B) 60 to 5 parts by weight of mica treated with an organosilane compound, (C) a bismaleimide compound in an amount of 0.01 to 2.0 parts by weight per 100 parts by weight of the sum of components (A) and (B), and (D) an organic peroxide, wherein the organic peroxide is present in an amount which falls within the range of from 0.001 to 0.05 part by weight per 100 parts by weight of the mixture (A) and (B) and the heating and melting treatment is carried out at a temperature of from 210°C to 290°C (claims 1 and 6-7). However, Nishio et al. are silent on the requirement of the melt strength enhanced by 1.5 times. In view of the polypropylene resin obtained by the substantial

identical process, the polypropylene resin would possess the claimed enhanced melt strength. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald* 205 USPQ 594 (CCPA 1980).

8. Claims 15 -16 and 19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cai et al. (US 2004/0242779 A1).

Cai et al. disclose a propylene resin in an amount from about 10 to 70 wt% comprising at least one ethylene/ α -olefin/non-conjugated diene elastomer and a curing system which comprises a free radical initiator, a first co-agent comprising diene-containing polymers with a 1,2-vinyl content greater than about 50% by weight, and a second co-agent comprising multifunctional maleimides containing at least two imide groups, wherein the free radical initiator comprises at least one organic peroxide in an amount of about 0.001 to 2 wt%; the first co-gent is in an amount of from about 0.1 to 10 wt%; the second co-agent comprises N,N'-m-phenylene dimaleimide in an amount of about 0.1 to 10% by weight of the modified blend ([0016]-[0018]; [0027]; [0035]; claims 1 and 8-10). Cai et al. further disclose that the blend are useful in automotive and other articles, such as gaskets, weatherseals, cup holders, and air bag covers and can also be used in machine parts, electrical parts, cables, hoses, belts and toys ([0060]). However, Cai et al. are silent on the requirement of the melt strength enhanced by 1.5 times. In view of the polypropylene resin obtained by the substantial identical process,

the polypropylene resin would possess the claimed enhanced melt strength. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald* 205 USPQ 594 (CCPA 1980).

Response to Arguments

9. Applicant's arguments filed 08/19/2008 have been fully considered but they are not persuasive.

"Nishio fails to disclose a polypropylene composition that is substantially free of or absent the presence of peroxide [I]. Rather Nishio purposely adds peroxide to the propylene resin composition (col. 3, lines 20-23, col. 3, lines 30-35, Example 1 - col. 5, lines 55-57). Furthermore, the propylene resin composition of Nishio includes a significant amount of mica treated with an organosilane compound (Claim 1). One skilled in the art of polymers will realize that the addition of mica will change or alter the properties exhibited by the formulated resin [II]. Nishio also fails to disclose the use of a maleimide oligomer derivative with a base or the use of a maleimide oligomer derived from biscitraconic acid [III]. Rather Nishio only discloses the use of a simple bismaleimide compound (col. 2, lines 54-67, Formula I, Claim 1)."

Referring to Argument [I], it is noted that "substantially free" and substantially in the absence" is defined as that "less than 0.01 wt% of the indicated component is present in the composition (based on the total weight of the composition)" (page 2, lines

25-27 of the present Specification). Nishio et al. disclose that the amount of the organic peroxide is present within the range of from 0.001 to 0.05 part by weight per 100 parts by weight of the mixture (A) and (B) (claim 6).

Referring to Argument [II], the present claims do not exclude the use of mica.

Referring to Argument [III], it is noted that Nishio et al. teach the use of bismaleimide which reads on “maleimide oligomer.”

“Cai fails to disclose a polypropylene composition comprised of polypropylene reacted with a maleimide oligomer derivative. Rather Cai discloses a thermoplastic elastomeric blend of a propylene resin with diene-containing polymers, multifunctional acrylates or maleimides, and a free radical initiator (Claim 1). The propylene resin in Cai is only present in the elastomeric blend in an amount preferably ranging from about 12% to 55% (paragraph 0027) [IV].

Cai further fails to disclose a polypropylene composition that is substantially free of or absent the presence of any peroxides [V]. Rather in Cai, the free radical initiator is defined to preferably be one or more organic peroxides (paragraph 0035, Claim 10). Thus Cai purposely adds peroxide to the thermoplastic elastomeric blend.”

Referring to Argument [IV], Attention is drawn to Claim 9, wherein the recitation “mixing 100 parts per weight (ppw) of the polypropylene with at least 0.1-8 ppw of an oligomer of maleimide or an oligomer of a maleimide derivatives” does not provide a limitation on the relative amount (%) of the polypropylene.

Referring to Argument [V], it is noted that "substantially free" and substantially in the absence" is defined as that "less than 0.01 wt% of the indicated component is present in the composition (based on the total weight of the composition)" (page 2, lines 25-27 of the present Specification). Cai et al. disclose that the amount of the organic peroxide in the range of about 0.001 to 2 wt% (claim 9).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

November 20, 2008

